

## PATENT SPECIFICATION

DRAWINGS ATTACHED

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Inventors: EDWARD GRAHAM FOSTER and  
MARTIN S. BLOOM.

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## COMPLETE SPECIFICATION

## Process for the Production of Foamed Gypsum Castings

We, IMPERIAL CHEMICAL INDUSTRIES LIMITED, a British Company, of Imperial Chemical House, Millbank, London, S.W.1, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

THIS INVENTION relates to the production of foamed gypsum castings from calcium sulphate  $\alpha$ - or  $\beta$ -hemihydrate, and constitutes an improvement in or modification of the invention described and claimed in our U.K. Patent Specification No. 1104419.

In our said U.K. Patent Specification No. 1104419, we have described and claimed a process for producing quick-setting lightweight foamed gypsum castings requiring little or no drying, which comprises the steps of mixing calcium sulphate hemihydrate with water to form a pourable or pumpable slurry, preferably of approximately plastering consistency, introducing into said slurry, or into the slurring water, calcium carbonate and sulphuric acid in quantities sufficient to generate sufficient foam-forming carbon dioxide gas *in situ* within said slurry to reduce the density of the final product, the sulphuric acid being added in sufficient excess to accelerate setting of the slurry, and casting the foaming slurry, either continuously or batchwise, in a mould. The foaming slurry may be introduced continuously into one end of a vertical continuous mould having a horizontal endless track for a base and a pair of vertical, spaced, parallel endless tracks for sides, the speed and/or the length of the endless tracks being so selected that the slurry has set by the time it issues from the other end of the mould. Alternatively the foaming slurry may be introduced con-

tinuously into one end of a horizontal continuous mould having a pair of horizontal, spaced parallel endless tracks for top and base, the speed and/or the length of the endless tracks being so selected that the slurry has set by the time it issues from the other end of the mould.

In our said U.K. Patent Specification No. 1104419 we have further described the production of laminated products comprising a foamed gypsum slab covered on one or both faces with a facing material such as paper, for example by running two continuous lengths of paper through the mould, from off rolls, in contact with opposite surfaces of the mould, and injecting the foaming slurry therebetween.

We have now found that an improved product is obtained if the facing material is a non-porous polyolefin-coated material, in particular polyethylene-coated paper, used with the polyolefin coating adjacent the foaming slurry; after peeling off this paper from the cast product, the latter is found, surprisingly, to have a fair face of solid plaster approximately one-sixteenth of an inch thick which is hard and knock-resistant. We are thus enabled to make a fair-faced, foamed panel in a single operation as opposed to first making the foamed panel and subsequently plastering its faces.

The present invention accordingly provides a process for producing foamed gypsum castings which comprises the steps of mixing calcium sulphate hemihydrate with water to form a pourable or pumpable slurry, preferably of approximately plastering consistency, introducing into said slurry, or into the slurring water, calcium carbonate and sulphuric acid in quantities sufficient to generate sufficient foam-forming carbon dioxide gas *in situ* within said slurry to reduce the density of the final product,

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the sulphuric acid being added in sufficient excess to accelerate setting of the slurry, and casting the foaming slurry, either continuously or batchwise, in a mould having at least one internal face lined with non-porous polyolefin-coated material, the polyolefin coating being at least on that side of the material adjacent the foaming slurry.

The material is preferably paper; the polyolefin coating is preferably a polyethylene coating, in particular a corona-discharged polyethylene coating.

The polyolefin-coated paper may be stripped off the casting immediately it has set, or it may be left in position until the casting is required for use.

In the case of continuous casting, it is convenient to use a vertical continuous mould or a horizontal continuous mould such as those described in our U.K. Patent Specification No. 1104419. A suitable vertical continuous mould is illustrated diagrammatically in the accompanying drawing, and consists of a pair of vertical, spaced, parallel endless belts 1 for its sides, with a horizontal endless belt (not illustrated) for its base. As illustrated, two continuous lengths of polyolefin-coated paper 2 are run through the mould, off reels 3, in contact with the opposite vertical endless belts 1 and with their polyolefin-coated surfaces facing inwardly, but it will be appreciated that a single continuous length of polyolefin-coated paper may be used in the case where it is desired to have a fair-face on only one side of the casting. Preferably, one or more reinforcements, such as wires or rods, are inserted in the mould between the vertical endless belts; as illustrated, such a reinforcement may comprise a continuous sheet of wire mesh 4, which may conveniently be run off a reel, but it is to be understood that there may be two or more such sheets. Foaming hemihydrate slurry is

set by the time it issues from the other end of the mould. If desired, the polyolefin-coated paper may be stripped off the casting 6 as it issues from the mould, and the casting is cut into suitable lengths. injected into the end of the mould by means of a number of injection nozzles 5, and has

#### WHAT WE CLAIM IS:—

1. A process for producing foamed gypsum castings which comprises the steps of mixing calcium sulphate hemihydrate with water to form a pourable or pumpable slurry, preferably of approximately plastering consistency, introducing into said slurry, or into the slurry water, calcium carbonate and sulphuric acid in quantities sufficient to generate sufficient foam-forming carbon dioxide gas *in situ* within said slurry to reduce the density of the final product, the sulphuric acid being added in sufficient excess to accelerate setting of the slurry, and casting the foaming slurry, either continuously or batchwise, in a mould having at least one internal face lined with non-porous polyolefin-coated material, the polyolefin coating being at least on that side of the material adjacent the foaming slurry.

2. A process as claimed in Claim 1, wherein said material is paper.

3. A process as claimed in Claim 1 or Claim 2, wherein said polyolefin coating is a polyethylene coating.

4. A process as claimed in Claim 3, wherein said polyethylene coating is a corona-discharged polyethylene coating.

5. A process for producing foamed gypsum castings substantially as hereinbefore described.

6. Foamed gypsum castings whenever prepared by the process substantially as hereinbefore described.

W. SCOTT,  
Agent for the Applicants.

## 1,127,296 COMPLETE SPECIFICATION

1 SHEET.

*This drawing is a reproduction of  
the Original on a reduced scale.*